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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 11. January, 1909. No. 121.

THE REPRESENTATIVES OF POTENTILLA ANSERINA IN EASTERN AMERICA.

M. L. Fernald.

Botanists who have collected both in northern New England and on our seacoast have long realized that the Silverweeds of these two regions are far from identical; but, owing to the confusion which has prevailed in regard to the identity of the many described variations of the species, the question has been left until the plants could be treated by a monographer. In November, 1908, two extensive monographs of *Potentilla* appeared, but when one turns to these two treatments with the hope of settling his long-standing problems the results are certainly disheartening. Wolf,[1] following the conservative practice of many generations, maintains *Potentilla Anserina* as a *Potentilla* of world-wide distribution, of which he recognizes eight leading varieties and numerous forms. Rydberg,[2] on the other hand, treats the Silverweeds as a genus, *Argentina*, with eight North American species. It is, then, not surprising that the novice in this group finds himself perplexed to label with an approximation to truth the material in his herbarium.

After spending some days in the study of the material in the Gray Herbarium and the Herbarium of the New England Botanical Club, the writer finds that, as the plants appear to him, they fall into two definite and recognizable groups. These two pronounced tendencies, happily, are the same as those indicated by Wolf for the primary grouping of the varieties, and by Rydberg for the chief groups of his species; but, working independently, each author seems to have

[1] Theodor Wolf, Monographie der Gattung Potentilla, in Bibliotheca Botanica, xvi. pp. 1–714, Stuttgart (1908).

[2] Rydberg, Rosaceae (pars), in North American Flora, xxii. pt. 4, pp. 293–376, New York Botanical Garden (1908).

overlooked an important character which is emphasized by the other. Wolf's key to the varieties of *Potentilla Anserina* is as follows.

"I. Folia subtus plus minusve dense (raro parcissime) pilis longis adpressis tomentum verum obtegentibus argenteo-sericea, nitentia; sepala externa plerumque 3–plurifida, raro integra.

A. Caules, petioli, rhaches foliorum pedunculique pilis accumbentibus vel saltem valde arrectis vestiti, quandoque glabrescentes.

1. Folia subtus dense argenteo-sericea vel saltem albicantia aut cinerascentia.

a. Planta tota (praeter paginam inferiorem foliorum dense pilosam) modice vel parce pilosa, virescens vel subcanescenti-viridis. *v. vulgaris.*

b. Planta tota (etiam super paginam superiorem foliorum) dense argenteo-sericea, nitens . . . . . *v. sericea.*

2. Folia subtus viridia, sicut planta tota parce pilosa vel subglabra. *v. nuda.*

B. Caules, petioli, rhaches foliorum pedunculique pilis subhorizontaliter patentibus vestiti, hirsuti; foliola subtus adpresse sericeo-pilosi.

1. Foliola sessilia l neari-oblonga vel obovato-oblonga, basi longiuscule cuneata . . . . . *v. hirsuta.*

2. Foliola conspicue (terminale longe) petiolulata suborbiculata vel rotundato-obovata, basi contracta vel brevissime cuneata. *v. maoria.*

II. Folia subtus aut glaberrima, aut tomento vero niveo obtecta, non nitentia vel super nervos pilis brevibus sericeis micantia (praevalente semper tomento opaco); sepala externa fere semper integerrima, rarissime 2–3 fida.

A. Folia et sepala subtus tomentosa, reliquae plantae partes aut modice pilosae, aut subglabrae.

1. Planta robusta foliis maximis usque 30 cm. et ultra longis multijugis, foliolis superioribus 3–6 cm. longis; tomentum foliorum intermixtis pilis sericeis brevibus micans . . *v. grandis.*

2. Planta mediocris vel parva foliis 3–6 (–10) cm. longis 3–5 (–7) jugis, foliolis superioribus 1–2 cm. longis, tomentum foliorum omnino opacum, ad summum quandoque secus nervos pilis sericeis paucis submicans . . . . . *v. groenlandica.*

B. Folia et sepala utrinque glaberrima, sicut plerumque reliquae quoque plantae partes. (Cfr. etiam *v. nudam.*) . . . . *v. Egedii.*"[1]

Rydberg's division of *Argentina* is

[1] Wolf, l. c. 672.

"Achenes corky with a deep groove; stems, petioles, and rachis of the leaves densely pubescent, with at first ascending and later spreading hairs.

Leaves silvery on both sides. 1. *A. argentea.*

Leaves green and glabrate above. 2. *A. Anserina.*

Achenes not corky, without a groove; stem, petioles, and the rachis of the leaves glabrous or slightly appressed-hairy and glabrate.

Petals usually over 1 cm. long, rounded-obovate.

Bractlets lanceolate, longer than the sepals; leaves usually 3–4 dm. long. 3. *A. pacifica.*

Bractlets elliptic or oblong, shorter than the sepals; leaves 1–2 dm. long. 4. *A. occidentalis.*

Petals 6–8 mm., rarely 1 cm. long, usually elliptic-obovate.

Leaflets elliptic-obovate to oblanceolate, many-toothed, silky as well as tomentose beneath; bractlets nearly equaling the sepals or even exceeding them.

Upper leaflets rounded at the apex, with more than 20 linear-lanceolate teeth; petals elliptic, about 6 mm. long; pistils few. 5. *A. Babcockiana.*

Upper leaflets acute or obtuse at the apex, with less than 20 triangular-lanceolate or ovate-lanceolate teeth.

Hypanthium acute at the base; bractlets linear-lanceolate; rachis of the leaves appressed-pubescent. (Western species.) 6. *A. subarctica.*

Hypanthium obtuse at the base; bractlets broadly lanceolate; rachis of the leaves glabrate or nearly so. (Eastern species.) 7. *A. litoralis.*

Leaflets broadly obovate, 0.5–1 cm. long, few-toothed, usually tomentulose beneath but silky only on the veins; bractlets linear or lanceolate, much shorter than the sepals. 8. *A. Egedii.*"[1]

As stated, the writer finds in studying the American material that the characters of the two leading groups in these two treatments are very constant. The achene-characters described by Rydberg are beautifully clear in all the fruiting material examined, and, associated as they are with the peculiarity of pubescence brought out more definitely in Wolf's descriptions of his primary groups, indicate that the plants of the two groups are scarcely to be considered varieties of one species. This view is further strengthened by the fact that the varieties of Wolf's first group are all Old World or circumpolar plants, while those of the second group are essentially confined to North America and adjacent eastern Asia.

Potentilla Anserina (including var. *vulgaris*), the circumpolar

[1] Rydb. l. c. 352, 353.

species, has the achenes corky and plump, with a groove in the back so that the achene appears slightly 2-ridged; its peduncles, stolons, and rhachises are usually very pubescent; the young foliage is lustrous beneath; and the bractlets of the calyx, though sometimes entire, are commonly toothed or lobed. This plant is abundant on gravelly shores of the Gulf of St. Lawrence, of the St. John River and its tributaries in Maine and New Brunswick, of Lake Champlain, and of many rivers and lakes of the interior; and it follows at low levels along the mountains from Alaska to New Mexico and southern California. It is also occasionally introduced southward on ballast and transported gravel.

The writer has sought in vain for constant characters to separate Rydberg's *Argentina argentea* from his *A. Anserina*. The key-character given by Dr. Rydberg is that the former has the "leaves silvery on both sides," the latter the "leaves green and glabrate above." Careful scrutiny of the diagnoses which describe the characters in one plant but fail to bring out their contrasts with parallel characters of the other,[1] shows no difference (except the pubescence) which might not

[1]

A. argentea	*A. Anserina.*
"Stolons 1–5 dm. long, white-silky with ascending or spreading hairs."	"Main stem almost none, from a cluster of fascicled roots and producing numerous runners 3–6 dm. long."
"Basal leaves 1–2 dm. long, pinnate, with 11–25 larger leaflets and smaller ones interposed; rachis with long white, at first ascending, soon spreading hairs."	"Leaves 1–2 dm. long, interruptedly pinnate, with 9–31 larger leaflets and smaller interposed, in the typical form spreading or flat on the ground, slightly silky and green above, white-silky and tomentose beneath."
"Larger leaflets 1–3 cm. long, obovate, rounded at the apex, serrate with 7–20 ovate or ovate-lanceolate teeth, white-silky on both sides or a little greener above, the smaller ones less than 1 cm. long and few-toothed."	"Larger leaflets 1–4 cm. long, oblong or oblanceolate, usually acute, deeply and sharply serrate with linear-lanceolate teeth in the European and eastern American form, more obovate, rounded at the apex and with broader ovate or triangular teeth in the Rocky Mountain form."
"Pedicels 2–7 cm. long, white-silky."	"Flowers 1–2 cm. in diameter, on pedicels 3–10 cm. long."
"Hypanthium and calyx white-silky, the former 5–8 mm. wide."	
"Bractlets oblong or elliptic, 4–6 mm. long, usually entire, about equaling the ovate or ovate-lanceolate sepals."	"Bractlets simple and lanceolate, or often broader, ovate-lanceolate, toothed or divided, generally a little longer than the broadly ovate sepals."
"Petals obovate or broadly oval, 6–9 mm. long."	"Petals oval, 7–10 mm. long."
"Achenes 2 mm. long, brown, obliquely obovate, corky, with a deep groove."	"Achenes numerous, corky, very thick, grooved at the upper end."

be expected from a single package of seed planted in different corners of a garden. The leaflets of *A. argentea* are said to be obovate, while those of *A. Anserina* are described as oblong, oblanceolate, or obovate. A sheet of the St. John Valley plant with the leaflets conspicuously silvery-silky above and labeled by its collector *Potentilla Anserina*, var. *concolor* is in the Gray Herbarium, but in spite of its leaves being "silvery on both sides" it was relabeled by Dr. Rydberg in 1908 "*Argentina Anserina* (L.) Rydb." Other specimens in the Gray Herbarium marked by Dr. Rydberg as his *A. argentea* have the leaflets of the most typical oblong outline. As to the persistence of the silvery-sericeous pubescence on the upper surfaces of the leaflets, this ecological character is very marked in extreme plants, but in other less pronounced colonies some of the leaves are sericeous above, while others are quite green and glabrous. Such a specimen in the Gray Herbarium collected by Engelmann on the Laramie River shows this inconstancy of the pubescence; nevertheless it was marked without question by Dr. Rydberg as "var. *concolor*" (prior to his raising that variety to specific rank as *A. argentea*). At best, then, *A. argentea* is to be treated as an ecological variant of *Potentilla Anserina*, characterized by the silvery-sericeous pubescence which normally covers both sides of the leaves. This rather pronounced extreme of *P. Anserina* has long been called var. *concolor* Seringe,[1] although the name was earlier assigned to it by Wallroth;[2] but Wolf draws attention to the fact that, prior to the publication of var. *concolor* by Wallroth, the plant had been described by Hayne as *P. Anserina*, "*β. sericea* foliis utrinque sericeis."[3] The plant, then, which is abundant in the Northwest and extends in less pronounced form eastward to the St. John River, Maine, and the Gulf of St. Lawrence, should be called *Potentilla Anserina*, var. *sericea* Hayne.

Of the other plants designated by Wolf under his first division none (except var. *vulgaris* which is typical *P. Anserina*) is known in America. Var. *nuda* seems to be strictly European; var. *hirsuta* is known only from Asia; and var. *maoria* (*P. anserinoides* Raoul; *P. Anserina*, var. *anserinoides* Hook. f.), which has stronger claims to specific rank than are recognized by Wolf,[4] is a unique plant of the New Zealand region.

[1] Ser. in DC. Prodr. ii. 582 (1825).

[2] Wallr. Sched. Crit. i. 236 (1822).

[3] Hayne, Arzneigew, iv. 31 (1816) according to Wolf, l. c. 672, 673.

[4] *P. anserinoides* Raoul, besides having petiolulate leaflets, differs from *P. Anserina* in its comparatively thin laterally compressed achenes which are not dorsally grooved.

Of the plants enumerated by Wolf and by Rydberg under their second main groups, *Potentilla Egedii* Wormsk. (*P. Anserina*, var. *Egedii* T. & G., *Argentina Egedii* Rydb.) seems to stand off from the others by the pinnate (scarcely interruptedly pinnate) leaves, and the few comparatively broad leaflets which are glabrous or glabrate beneath. The writer has been unable to see good achenes of this plant, but they are said by Rydberg to be "2.5 mm. long, plump, not grooved." *P. Egedii* is an arctic plant seemingly distinct from *P. Anserina* and extending down our coast to northern Labrador.

The other species maintained by Rydberg are open to greater doubt. In the first place, the chief distinction of his species nos. 3 and 4 as contrasted with the remainder is, that in the first two species the petals are "usually over 1 cm. long, rounded-obovate"; while in the others the petals are said to be "6–8 mm., rarely 1 cm. long, usually elliptic-obovate." Under the group with petals "over 1 cm. long" are *Argentina pacifica* and *A. occidentalis*, which in the seventeen sheets at hand show petals varying from 1–1.3 cm. long, with outlines from elliptic-oblong to broadly obovate. In the eastern plant called *A. litoralis* the fifteen sheets before the writer show elliptic to obovate petals 1–1.3 cm. long; not one of them *less* than 1. cm. in length. This is the common salt marsh plant of New England and eastern Canada, and one cannot refrain from expressing regret that Dr. Rydberg has never known the full beauty of its large flowers. This fundamental distinction of size of petals is, then, a character which is not shown by abundant specimens. Whether *A. occidentalis* is separable from *A. pacifica* is not one of the chief questions of this paper, but it is worth recording that the specimen of Baker's no. 3217 (the type number of *A. occidentalis*) in the Gray Herbarium is unlike the description given by Rydberg in having lanceolate bractlets which are quite as long as the sepals, thus answering more nearly the key character of *A. pacifica*.

Of *Argentina Babcockiana*, described from Westminster Park and from the shores of Oneida Lake, New York, the writer has no knowledge; but with *A. litoralis*, the common species "along the coast and in salt marshes, from Labrador, Newfoundland, and Quebec to Long Island," he has long been familiar. This salt marsh plant is clearly distinct from *Potentilla Anserina* of the gravel beaches of the St. Lawrence, the St. John, and Lake Champlain, in the dull white tomentum of its leaves; the glabrous or early glabrate peduncles, stolons, and

rhachises; and the laterally compressed round-backed, not furrowed, achenes. That it merits specific recognition there can be no question, but prolonged study has failed to show that it differs in constant or even apparent characters from *Potentilla pacifica* Howell [1] (*P. Anserina*, var. *grandis* T. & G., *Argentina pacifica* Rydberg). In all essential characters — pubescence, bractlets, petals, achenes, etc., — the plant of the Atlantic salt marshes is like that of the Pacific coast, though Rydberg's descriptions make it differ in its smaller flowers (see above) and its more obovate or oval leaflets. In the outline of the leaflets *P. pacifica* shows considerable variation, and many of the northwestern specimens cannot be distinguished by this character from the plant of the Atlantic coast. There seems to be no reason, then, why the two plants should be kept apart by the artificial character set up for them. It is interesting to find, as our knowledge of temperate floras should lead us to expect, that *P. pacifica* extends by way of the Aleutian Islands to the coast of eastern Asia and south to Japan,[2] a fact already brought out by Wolf, who, although overlooking the important achene-character of the plant and therefore treating it as *P. Anserina*, var. *grandis*, states its range as the Pacific and Atlantic coasts of America and the east coast of Asia.[3]

As *Potentilla pacifica* approaches the northern limit of its range it becomes dwarfed and its leaflets are rapidly reduced in number until, in northern Labrador, Greenland, arctic Alaska, and northeastern Siberia, it often has only 7–15 small leaflets. This dwarfed arctic and subarctic extreme is *P. Anserina*, var. *groenlandica* Tratt., but, so far as the material at hand shows, it is to be considered a dwarfed phase of *P. pacifica* rather than a true variety. On the coast of New England and eastern Canada, Dr. Rydberg's *P. litoralis*, which is said to have the "leaves 1–3 dm. long," with the "upper leaflet 2–3 cm. long," becomes dwarfed under adverse conditions and has leaves barely 3 cm. long, with as few as 13 leaflets, the terminal 7 mm. long,

[1] Howell, Fl. N. W. Am. i. 179 (1898).

[2] These plants which occur in Eastern North America and in northeastern Asia but not in Europe make a considerable portion of our flora — one hundred or more species; *Onoclea sensibilis*, *Cypripedium arietinum*, *Habenaria bracteata*, *Polygonum arifolium*, *P. sagittatum* and *P. scandens*, *Geum strictum*, *Phryma Leptostachya*, &c. Several such plants are associated in salt marshes or brackish soil on both the Atlantic and Pacific coasts with *Potentilla pacifica*; for example, *Poa eminens*, *Glaux maritima*, var. *obtusifolia*, and *Gentiana Amarella*, var. *acuta*.

[3] See Wolf, l. c. 676.

while luxuriant plants have leaves 4.3 dm. long, the terminal leaflet 5.5 cm. in length. *Argentina subarctica* Rydberg, judging from specimens in the Gray Herbarium named by Dr. Rydberg, is transitional between well developed *Potentilla pacifica* and its most dwarfed state.

As interpreted by the writer the members of this group in eastern America should be classified as follows.

* Achene thick-ovoid to subglobose, more or less corky, dorsally sulcate: stolons, peduncles, petioles, and rhachises more or less pubescent with ascending or loosely spreading hairs: leaflets silvery-silky beneath, at least the younger lustrous.

P. ANSERINA L. Leaflets green and glabrous or glabrate above: bractlets often cleft.— Sp. 495 (1753). *P. Argentina* Huds. Fl. Ang. 195 (1762). *Argentina vulgaris* Lam. Fl. Fr. iii. 119 (1778). *P. Anserina α vulgaris* Hayne, Arzneigew. iv. 31 (1816) according to Wolf, Mon. Pot. 672 (1908). *P. Anserina α discolor* Wallr. Sched. Crit. i. 236 (1822). *Argentina Anserina* Rydb. Mem. Dept. Bot. Columbia Univ. ii. 159 (1898).— Widely distributed in northern regions. In America extending south, chiefly in gravelly or sandy soil, to Prince Edward Island, the St. John Valley of New Brunswick and Maine, Lake Champlain, western New York, northern Indiana, central Illinois, Iowa, New Mexico, and southern California.

Var. SERICEA Hayne. Leaflets silvery-sericeous on both surfaces. — Arzneigew. iv. 31 (1816) according to Wolf, Mon. Pot. 672, 673 (1908). *P. Anserina β. concolor* Wallr. Sched. Crit. i. 236 (1822). *P. Anserina β. holosericea* Gaudin, Fl. Helvet. iii. 406 (1828). *P. Anserina, α argentea* Neilr. Fl. N. Österr. 908 (1859). *P. Anserina α. unicolor* Schur, En. pl. Transs. 189 (1866). *P. sericea* Zimmeter, Eur. Art Pot. 6 (1884), acc. to Wolf. *P. concolor* Zimmeter, Bot. Kal. 66 (1887) acc. to Wolf. *Argentina Anserina concolor* Rydb. Mem. Dept. Bot. Columbia Univ. ii. 160 (1898). *A. argentea* Rydb. Bull. Torr. Bot. Cl. xx. iii. 143 (1906).— Of similar distribution; in the eastern states and Canada often growing with or near the typical form of the species; in the more arid regions of North America generally with thickish leaves.

* * Achene laterally compressed, firm, rounded on the back, not sulcate: stolons, peduncles, petioles, and rhachises glabrous or glabrate: leaflets white-tomentose beneath with opaque hairs (slightly if at all sericeous) or glabrate.

+ Calyx and lower surfaces of the interruptedly pinnate leaves white-tomentose.

P. PACIFICA Howell. Leaves 0.3–5 dm. long, with 7–31 oblong, oblanceolate, or obovate leaflets; bractlets usually simple.— Fl. N. W. Am. i. 179 (1898). *P. Anserina groenlandica* Tratt. Ros. Monog.

iv. 13 (1824). *P. Anserina, β. grandis* T. & G. Fl. i. 444 (1840). *Argentina Egedii* Rydb. Mem. Dept. Bot. Columbia Univ. ii. 158 (1898) in part. *A. Anserina grandis* Rydb. l. c. 161 (1898). *A. pacifica* Rydb. in N. A. Fl. xxii pt. 4, 353 (1908). *A. litoralis* Rydb. l. c. 354 (1908). *A. subarctica* Rydb. l. c. 354 (1908).— From Greenland to northeastern Siberia, extending southward, in damp brackish or saline soils, chiefly near the coast to Long Island, New York, California, and Japan; in arctic and subarctic situations and in unfavorable conditions southward becoming very small.

++ Calyx and lower surfaces of the simply pinnate leaves glabrous or glabrate.

P. Egedh Wormsk. Fl. Dan. ix. fasc. 27, 5. t. 1578 (18 8). *P. Anserina, δ Egedii* T. & G. Fl. i. 444 (1840). *P. Anserina,* var. *concolor* Lange, Consp. Fl. Groenl. 234 (1887) not Wallr. *Argentina Egedii* Rydb. Mem. Dept. Bot. Columbia Univ. ii. 158 (1898) in part. — Arctic regions, extending south on our coast to northern Labrador.

Gray Herbarium.

SALIX SUBSERICEA A DISTINCT SPECIES.

F. F. Forbes.

For the past two seasons the writer has been much puzzled by a willow the characters of which do not agree with any description given in the current manuals. This willow is rather common in the vicinity of Boston, growing in wet places where willows usually thrive. The writer has collected it in different locations in Dedham, West Roxbury, and Arlington. Leaf-specimens collected in western Massachusetts and in southern New York indicate that it has quite a wide range.

It was at first suspected that the willow in question might be a hybrid between *Salix cordata* Muhl. and *S. sericea* Marsh., but study of numerous specimens from many different shrubs shows that it cannot be a hybrid. As far as the writer's observations go, willows which are hybrids between two definite species do not present constant characters. One shrub may have the fruit more like that of one parent and the leaves more like those of the other; or the shrubs may be quite intermediate in most respects; but no two of them are alike.

The willow under consideration, however, is fully as constant in its characters as *Salix cordata* Muhl., while it is clearly separated from its near relatives, *S. petiolaris* Sm. and *S. sericea* Marsh. The leaves, which resemble those of *S. cordata* much more than those of *S. petiolaris* or *S. sericea* and remain green or blacken but slightly in drying, have beneath and usually on the midvein above a permanent pubescence, which is not so dense or silky as that of *S. sericea*. The small glandular-toothed stipules are a little less deciduous than those of *S. sericea* and *S. petiolaris*, some of them usually being present at the end of the season. The leaves and branches make a greater angle with the twigs and main trunks respectively than do those of the two latter species and give the shrub a somewhat zigzag appearance in the field. The aments and capsules are best described by saying that they are quite intermediate between those of *S. petiolaris* and *S. sericea*. In the former species the aments (at least when young) are leafy-bracted at base and in maturity appear loose from the lengthening of the pedicels; the oblong-spatulate scales are brown to yellowish; and the long-beaked capsules (6.5–8 mm. long) are on pedicels which usually much exceed the scales. In *S. sericea* the dense aments are slightly if at all bracted at base, the short oblong scales are blackish, and the round-tipped capsule (2.5–4.5 mm. long) is on a pedicel which about equals or only slightly exceeds the scale. In the plant under special consideration the ament is leafy-bracted at base as in *S. petiolaris* and it is nearly as loosely flowered as in that species, the scales are blackish and oblong as in *S. sericea*, and the lance-conic blunt capsule (5–7 mm. long) is elevated on a pedicel which is once and a half or twice as long as the scale.

From *Salix cordata*, which it somewhat resembles in foliage, the problematic willow is quickly distinguished by the pubescent capsule, the smaller usually deciduous stipules, and the strongly whitened lower surface of the leaves, as well as by numerous other characters. A hybrid of this willow and *S. cordata* has been found and is now growing near the ice-house on Cow Island, West Roxbury.

A search in the Gray Herbarium and the Herbarium of the New England Botanical Club has revealed some doubtful foliage-specimens; but only one sheet of specimens which is positively identified with the writer's material has been found. This, however, is a very important specimen, for it is the type of Andersson's *Salix petiolaris*,

α, subsericea,[1] which was collected in May, 1847, at Fresh Pond by the late George B. Emerson. Andersson treated *S. petiolaris* as an aggregate species with five chief components, among them *S. petiolaris, ε, sericea* (*S. sericea* Marsh.). The young branch of the Fresh Pond shrub was described as follows:

"*α, subsericea*, foliis initio sat dense sericeo-pubescentibus demum subglabratis pilis raris subtus derelictis anguste lanceolatis margine crenulatis, amentis subdensifloris, capsulis brevius pedicellatis obtusiusculis. (S. sericea Hb. Asa Gray e Massachusetts). Haec quum habitu tum notis *S. sericeae* maxime affinis, a qua vix differt nisi amentis magis laxifloris, capsulis longioribus et foliis demum subtus subglabratis." [2]

Further search of literature shows that in 1901, Dr. Rydberg, without any apparent knowledge either of Andersson's description or the very accessible type from Massachusetts, made the combination "*Salix sericea subsericea* (Anders.) Rydb.," [3] citing definitely as a synonym "*S. petiolaris subsericea* Anders.," for a plant with "capsule smaller"! and said to grow from New York to Michigan; although a mere reference to Andersson's original description would have shown that *S. petiolaris, α, subsericea* was clearly stated by Andersson to have the capsules longer ("capsulis longioribus") than in *S. sericea* and to come from Massachusetts.

The latest mention of the plant found is by Schneider in 1904, when he treated it as a hybrid of *Salix sericea* and *S. petiolaris*:

"*S. sericea* × *petiolaris*: *S. subsericea* (*petiolaris var. subsericea* Anderss., in DC., l. c. 234; *sericea var. subsericea* Rydbg., in Britt. Manual 318. *1901*). Scheint unter den beiden Elternnamen in Kultur und hält nach meinen Beobachtungen zieml. genau die Mitte zwischen diesen." [4]

The writer ventures to say that if Andersson had had the material now available he would have considered this willow a good species. It certainly resembles *S. petiolaris* more than it does *S. sericea*; but, as its characters are essentially constant wherever the shrub has been found and as it is quite fertile and without the tendencies we have learned to expect in hybrid willows, there seems to be no reason why

[1] Anders. in DC. Prodr. xvi. pt. 2, 234 (1864).
[2] Anders. l. c.
[3] Rydberg in Britton, Man. 318 (1901).
[4] Schneider, Handbuch der Laubholzkunde, pt. 1, 65 (1904).

it should not have specific recognition. The foregoing observations may be briefly summarized as follows.

Salix subsericea (Anders.) Schneider. Large shrub (2 to 2.5 m. high), with more or less zigzag habit, the reddish- or olive-brown branches making a considerable angle with the trunks; branchlets puberulent when young, soon glabrate: leaves lanceolate, when young loosely sericeous, in maturity glaucous and sparingly sericeous or glabrate beneath, dark green and somewhat lustrous except for the finely puberulent dull pale midrib above, 6–10 cm. long, 1.2–2.2 cm. broad, rather coarsely appressed serrate, the teeth about 5 to a centimeter; petioles slender, 1–1.5 cm. long: stipules small, lanceolate, acuminate, serrulate. Winter-buds puberulent: aments leafy-bracted at base, loosely to subdensely flowered, in maturity 2–3 cm. long: scales oblong, with rounded blackish pilose tips: capsule lance-conic, blunt, loosely sericeous, 5–7 mm. long, its slender pedicel once and a half or twice as long as the scale and many times exceeding the minute gland (about 0.3 mm. long).— Handbuch der Laubholzk. pt. 1, 65 (1904). *S. petiolaris*, α, *subsericea* Anders. in DC. Prodr. xvi. pt. 2, 234 (1864). *S. sericea subsericea* Rydb. in Britton, Man. 318 (1901) as to name-bringing synonym but not as to plant described. *S. sericea* × *petiolaris* Schneider, l. c. (1904).— Originally described from Fresh Pond, Cambridge, Massachusetts, coll. May, 1847 (*Geo. B. Emerson*): now known to be generally distributed in the neighborhood of Boston; and apparently westward to southern New York.

The writer is indebted to Prof. M. L. Fernald for his kind assistance in the bibliographical part of this article.

Brookline, Massachusetts.

SOME INTERESTING MAINE PLANTS.

Joseph A. Cushman.

During August and September of 1907 I spent the larger part of the time in collecting in various parts of Maine. During August about two weeks were spent about Machias Bay with headquarters at Roque Bluffs. Mr. C. H. Knowlton has already noted the character of the region and some of the interesting plants of the mainland (Rhodora, ix. 218).

With the aid of a boat, Mr. S. N. F. Sanford and I were enabled to visit nearly thirty of the islands in the bay and outside. These islands are almost entirely rocky, with bold cliffs and almost constantly bathed with fog. On them a number of noteworthy plants were found. Among these *Sedum roseum* (L.) Scop. was of interest as it had been found by the Josselyn Botanical Society in one locality, The Point of Main, on the mainland. On the outermost islands it seems to be very common. We collected it on Old Man Island and Double Shot Island off Cutler; Libby Islands off Machiasport; The Brothers Island; and Knight's, Head Harbor, and Mistake Island off Jonesport. At all of these stations the plant was plentiful in the crevices of the cliffs. *Euphrasia Randii* Robinson and *E. americana* Wettst. were common everywhere. On the outer end of Great Wass Island several trees of *Pinus Banksiana* Lambert were seen and in the bog *Eriophorum opacum* (Björnstr.) Fernald was collected, and in the woods *Lycopodium annotinum* L., var. *pungens* Desv. On the flats in Chandler River, *Polygonum Fowleri* Robinson was not uncommon. On the cliffs, especially the outer ones was plenty of *Sagina nodosa* (L.) Fenzl., as well as var. *glandulosa* (Bess.) Asch. On Cross Island, off Cutler, along the border of a salt pond were great mats of *Stellaria humifusa* Rottb. In a small pond just back of the beach on Head Harbor Island was a quantity of *Sparganium simplex* Huds. *Rumex pallidus* Bigel. was common on the beach. Altogether the region is a very interesting one and many other notable plants were collected.

Late August was taken up by a trip to Spencer Lake and Spencer Mountain to the East of Moosehead Lake. These were both interesting, the mountain especially so. Both of the Spencer Mountains rise directly out of low ground and seem to be true monadnocks. They are rather abrupt, wooded to the summit, but with many bare cliffs and slides. About the lake many interesting plants were found. *Carex retrorsa* Schwein., var. *Robinsonii* Fernald on the shore, and beside our camp a fine tree of the true *Betula alba* L. may be noted. Along trails in the woods the delicate *Botrychium ternatum* (Thunb.) Sw., var. *rutaefolium* (A. Br.) D. C. Eaton was not uncommon. In the woods of the north slope at about 2800–3000 ft. were found *Pyrola minor* L., and *Galium kamtschaticum* Steller, two plants of Mt. Katahdin. On the cliffs were many ferns, among them the most interesting being *Aspidium fragrans* (L.) Sw. The height of the mountain as determined by aneroid was 3268 feet.

A few days were spent early in September at Mt. Kineo. On the dry summit was *Juncus tenuis* Willd., var. *Williamsii* Fernald. On the cliffs, *Aspidium fragrans* (L.) Sw., *Draba arabisans* Michx., and *Mentha arvensis* L., var. *glabrata* (Benth.) Fernald. *Arabis Drummondi* Gray was abundant on both Mt. Kineo and Spencer Mt. The later part of September was given to a collecting trip on the Allagash and Upper St. John Rivers. *Potamogeton perfoliatus* L. was common in Churchill Lake, *P. heterophyllus* Schreb., forma *longipedunculatus* (Mérat.) Morong in Eagle Lake, and forma *maximus* Morong in Long Lake. *Viola labradorica* Schrank was collected on an island in Eagle Lake, and on the shore of Umsaskis Lake *Carex Crawfordii* Fernald, var. *vigens* Fernald.

On the St. John the commoner plants were collected: *Halenia deflexa* (Smith) Griseb., *Hedysarum boreale* Nutt., *Salix pellita* Anders., *Viola novae-angliae* House, &c. On one of the bluffs *Rosa acicularis* Lindl., var. *Bourgeauiana* Crepin was still in blossom.

In one place where a brook came down the bank and spread out, a moist area with some grass had been developed among the rocks. Here were a few specimens of the rather rare *Drosera linearis* Goldie. The part of this brook back on the flat country above the river would be well worth investigating, as the bogs there are probably the source of the plants found on the river bank. As these plants were not discovered until late on our last day there, no further tracing of their source was possible.

Boston Society of Natural History.

A NEW HYBRID VIOLET.

F. F. Forbes.

While studying *Viola Brittoniana* Pollard on Charles River Meadows, Dedham, Massachusetts in the fall of 1906, the writer observed a violet of rather unusual appearance. In the color and outline of the leaves it was much like *V. lanceolata* L., which grew plentifully at this station, but the habit was that of *V. Brittoniana*.

The plant was transferred with care to the writer's violet bed in Brookline for further study. It survived the next winter and blos-

somed freely in the spring. The blossoms were somewhat larger than those of *Viola Brittoniana* but of the same blue color and general appearance.

During the summer and fall numerous cleistogamous flowers appeared but all were completely sterile, although no trouble had been experienced in raising an abundance of seed from true *Viola Brittoniana* in this same bed. Several small plants were made from the original one by division in the spring of 1908. All of these plants lived and blossomed profusely; and in July began to throw out leafy stolons, which reached a length of more than three inches, bearing apetalous flowers like those of *V. lanceolata*. These stolons proved conclusively that the plant must be a hybrid between *Viola Brittoniana* and *V. lanceolata*. As far as known, this is the first time a hybrid between these two species or between a blue stemless violet and a white stoloniferous one has been noticed. The hybrid may be described as follows.

Viola Brittoniana × **lanceolata**, n. hybr. Leaves with the color of those of *V. lanceolata*, much more lanceolate in outline, less deeply parted, and more rounded at base than those of *V. Brittoniana*; the leaves of the stolons entire, similar to but somewhat broader than those of *V. lanceolata*; petaliferous flowers differing from those of *V. Brittoniana* chiefly in their larger size: apetalous flowers numerous, on peduncles about the length of the petioles, withering early, always infertile: stolons three or more inches long, vigorous, bearing leaves and apetalous flowers: pubescence and time of flowering like that of *V. Brittoniana*.

Brookline, Massachusetts.

The Bryophytes of Connecticut.[1] — This is a recently issued bulletin of 203 pages. The preface and table of contents are followed by fifteen pages on the general characteristics of the bryophytes, nearly five on the history of bryology in Connecticut, nearly six on distribution according to environment, and two on economic value of bryophytes. The catalogue proper occupies 139 pages. The last 27 pages of the bulletin contain a brief summary of the distribution by orders, a bibliography, and an index to species and synonyms.

[1] The Bryophytes of Connecticut, by Alexander William Evans, Ph.D., and George Elwood Nichols, B. A. State of Connecticut, Public Document No. 47. State Geological and Natural History Survey, Bulletin No. 11. Hartford, 1908.

As might have been expected of these well known bryologists the authors have given us a valuable contribution to the list of local floras. It is considerably more than a catalogue. With its succinct account of the general characteristics of the bryophytes and its more detailed descriptions of the six orders recognized (*Marchantiales, Jungermanniales, Anthocerotales, Sphagnales, Andreaeales, Bryales*), as well as the numerous and excellent keys to the genera and species, it might almost be classed as a manual were it not for the fact that specific descriptions are omitted. The distribution of each species in the counties and towns of Connecticut is clearly indicated, also the known general range over the surface of the earth.

It is a pleasure to note so few things requiring adverse criticism, and these of little real importance. On page 91 the key indicates *Pogonatum* and *Polytrichum* as having mitrate calyptrae, an error which has appeared in certain other bryological publications during the last generation. After being favorably impressed with the abundance of keys to genera and species one is rather surprised suddenly to realize that there is no key to the orders and families. However, this is of less importance when one remembers that 28 of the 35 families belong to the *Bryales*, and that this order has a general key to all genera, irrespective of their groupings under the families.

Aside from *Hypnaceae* and *Dendroidaceae* the arrangement of families and genera follows the Engler and Prantl system rather closely except that *Weberaceae, Buxbaumiaceae, Georgiaceae,* and *Polytrichaceae* are placed at the end of the volume, as in Warnstorf's Laubmoose. Several of the Engler and Prantl generic names, e. g. *Apolozia, Saccogyna, Nowellia, Kantia, Stephanina, Bellincinia,* are respectively replaced in the Connecticut flora by the generally better known names of *Jungermannia, Geocalyx, Cephalozia, Calypogeia, Radula,* and *Porella.* In this connection we are glad to note that *Racomitrium* and *Elodium* have their original spelling, and that *Octodiceras, Ricciella,* and *Sphenolobus* are raised to generic rank.

This valuable bulletin should be in the hands of all bryologists as well as others who are interested in a model flora of this type, and there is little excuse for its not being there when the State Librarian at Hartford advertises it for the absurdly small sum of thirty cents. — J. FRANKLIN COLLINS, Brown University.

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